

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

BPO2614 – PRODUCTION & OPERATIONS MANAGEMENT

(All sections / Groups)

19 OCTOBER 2016

9.00 am – 12 pm

(3 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 6 pages including the cover page with 5 questions only.
2. Attempt ALL FIVE questions. All questions carry equal marks and the distribution of the marks for each question is given.
3. Please write all your answer in the Answer Booklet provided.

QUESTION 1

A company manufactures specialty pollution-sensing devices for the offshore oil industry. One particular device has reached maturity, and the company is considering whether to replace it with a newer model. Technologies have not changed dramatically, so the new device would have similar functionality to the existing one, but would be smaller and lighter in weight. The firm's three choices are: (1) keep the old model, (2) design a replacement device with internal resources, (3) and purchase a new design from a firm that is one of its suppliers. The market for these devices will be either "receptive" or "neutral" of the replacement model. The financial estimates are as follows: Keeping the old design will yield a profit of \$6 million dollars. Designing the replacement internally will yield \$10 million if the market is "receptive," but a \$3 million loss if the market is "neutral." Acquiring the new design from the supplier will profit \$4 million under "receptive," \$1 million under "neutral." The company feels that the market has a 70 percent chance of being "receptive" and a 30 percent chance of being "neutral."

- (a) Draw the appropriate decision tree. [6 Marks]
- (b) Calculate expected value for all courses of action. [6 Marks]
- (c) What action yields the highest expected value? [3 Marks]
- (d) What is a product-by-value analysis, and what type of decisions does it help managers make? [5 Marks]

[Total: 20 Marks]

Continued...

QUESTION 2

A quality analyst wants to construct a sample mean chart for controlling a packaging process. He knows from past experience that the process standard deviation is two ounces. Each day last week, he randomly selected four packages and weighed each. The data from that activity appear below.

	Weight			
Day	Package 1	Package 2	Package 3	Package 4
Monday	23	22	23	24
Tuesday	23	21	19	21
Wednesday	20	19	20	21
Thursday	18	19	20	19
Friday	18	20	22	20

- (a) Calculate all sample means and the mean of all sample means. [3 Marks]
- (b) Calculate upper and lower 2-sigma x-bar chart control limits that allow for natural variations. [3 Marks]
- (c) Based on the x-bar chart, is this process in control? [3 Marks]
- (d) Discuss the three (3) categories of Quality definitions. [5 Marks]
- (e) Explain how just-in-time processes relate to the quality of an organization's outputs. [6 Marks]

[Total: 20 Marks]

Continued...

QUESTION 3

The following data are pulled from a recent Walsh Manufacturing annual report.

Assets

Raw material inventory	\$120,000
Work-in-process inventory	\$50,000
Finished goods inventory	\$300,000
Property, plant & equipment	\$500,000
Other assets	<u>\$200,000</u>
Total assets	\$1,170,000

Condensed Income Statement

Revenue	\$2,000,000
Cost of goods sold	\$600,000
Other expenses	<u>\$1,000,000</u>
Net income	\$400,000

- (a) What is the percent invested in inventory? [3 Marks]
- (b) What is the inventory turnover? [3 Marks]
- (c) Calculate the weeks of supply. [3 Marks]
- (d) How are outsourcing and vertical integration related? Can a single firm successfully do both? [6 Marks]
- (e) Identify the advantages and disadvantages of using the "few suppliers" sourcing strategy. [5 Marks]

[Total: 20 Marks]

Continued...

QUESTION 4

- (a) What is ABC inventory analysis? Identify three (3) policies that may be based upon the results of an ABC analysis. [6 Marks]
- (b) Identify the four types of inventory. [4 Marks]
- (c) Your company has compiled the following data on the small set of products that comprise the specialty repair parts division. Perform ABC analysis on the data. Which products do you suggest the firm keep the tightest control over? Explain. [10 Marks]

SKU	Annual Demand	Unit Cost
R11	250	\$250
S22	75	\$90
T33	20	\$60
U44	150	\$150
V55	100	\$75

[Total: 20 Marks]

Continued...

QUESTION 5

- (a) How can an organization develop and implement lean operations? [6 Marks]
- (b) What is supplier partnerships? Identify the Four (4) goals of supplier partnerships [6 Marks]
- (c) Differentiate between a push and a pull system. [4 Marks]
- (d) Describe the appropriate inventory tactics for a just-in-time (JIT) environment? [4 Marks]

[Total: 20 Marks]

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